



Original Research Article

Knowledge of Basic Life Support among the Interns and Postgraduate Students of Dental Colleges in Bangalore City, Karnataka

Shekhawat Kuldeep S¹, Chauhan Arunima²

¹Assistant Professor, Indira Gandhi Institute of Dental Sciences, Sri Balaji Vidyapeeth University, Pondicherry, India.

²Assistant Professor, Faculty of Dentistry, Melaka Manipal Medical College, Manipal Campus, Manipal University, Manipal, India.

Corresponding Author: Shekhawat Kuldeep S

Received: 28/07/2014

Revised: 13/08/2014

Accepted: 14/08/2014

ABSTRACT

Background: Dentists play an important role in providing oral health care. Medical emergencies can happen anywhere including the dentists' office; hence dentist must be aware of the various procedures that need to be performed during such times.

Objective: To assess the Knowledge of BLS among the Interns and Postgraduate students of dental colleges in Bangalore city.

Settings and Design: A cross-sectional Observational study conducted among the dental colleges in Bangalore city, India

Materials and Methods: A cross-sectional study was conducted to assess the knowledge of BLS among the interns and postgraduate students by assessing their responses to a structured, self-administered questionnaire with 21 multiple choice close ended questions pre-tested through pilot survey.

A total of 328 participants (230 postgraduates & 98 interns) were part of the study and belonged to 5 dental institutes of Bangalore city in India. The colleges were selected by lottery method of simple random sampling. The aspects on which participants were interrogated were about the abbreviation of BLS, AED and EMS (Emergency Medical Service), sequential steps in BLS, assessment and resuscitation techniques with regard to airway, breathing, circulation in unresponsive victims.

Results: Only 43% of the respondents had attended a training programme in BLS. No one among the participants had complete knowledge about basic life support. Only one respondent scored between 80% – 89% and more than 85% scored below 50%.

Discussion: Awareness of BLS among the interns and postgraduate students was not satisfactory, and hence it is now essential to make it mandatory in the field of dentistry for both undergraduate and postgraduate curricula.

Key Words: BLS Awareness, Cardiac resuscitation, EMS, AED, Dentist knowledge of BLS

BLS – Basic Life Support

AED – Automated External Defibrillator

EMS – Emergency Medical Services

INTRODUCTION

Dentists must be prepared to manage medical emergencies which may arise in practice. ^[1] Cardiac arrests and accidents are the most common emergencies with grave consequences, but the high mortality associated with them can be prevented most of the times by maneuvers and skills.

Cardiac arrest results in the cessation of blood supply to the brain leading to depression of breathing as well. Thus this combination of no breathing and circulation causes generalized ischemia, which in case of brain, allows a narrow window of ten minutes only. That is, if anything has to be done, it has to be done within ten minutes because after that survival is impossible. The most important aspect of nearly all medical emergencies in the dental office is to prevent, or correct, insufficient oxygenation of the brain and heart. Therefore, the management of all medical emergencies should include ensuring that oxygenated blood is being delivered to these critical organs. This is consistent with basic cardiopulmonary resuscitation, with which the dentist must be competent. ^[2]

Resuscitation “is the art of restoring life or consciousness of one apparently dead. ^[3] Resuscitation attempts date way back in time. Early records from Egyptian mythology and the Bible suggest that mouth-to-mouth and mouth-to-nose respiration were among the earliest resuscitative efforts using artificial respiration. ^[4]

One of the first authenticated cases of recovery following artificial respiration using the mouth-to-mouth technique was the resuscitation of a suffocated miner by Tossach in 1744. ^[5] Overtime, resuscitation skills have evolved into a proper protocol, which involves cardiopulmonary resuscitation (CPR) commonly known as Basic Life Support (BLS). ^[2]

Basic Life Support [BLS] includes both prompt recognition and immediate support of ventilation and circulation in case of respiratory or cardiac arrest. It has a combination of skills including mouth-to-mouth breathing to support ventilation and chest compression to normalize blood circulation to the brain and vital organs.

Knowledge of BLS and practice of simple CPR techniques ensures the survival of the patient long enough till experienced medical help arrives and in most cases is itself sufficient for survival.

In a study conducted among dentist in 2 cities of Karnataka, India, it was found that less than half (42.2%) of the dentist reported having received practical training in management of medical emergencies during their undergraduate and post graduate education. ^[6] The results also emphasized the need for improvement of the training of dentist in the management of medical emergencies at the undergraduate, postgraduate & continuing education levels.

An increasing proportion of the population is medically at risk. According to the European resuscitation council, sudden cardiac arrest is a leading cause of death in Europe, affecting about 7, 00,000 individuals a year. ^[7] Thus, an effective management of an emergency situation in the dental office is ultimately the dentist’s responsibility

This study was conducted to assess the awareness of BLS among the interns and post-graduates students of dental colleges in Bangalore city.

MATERIALS AND METHODS

A cross-sectional study was conducted to assess the knowledge of BLS among the interns and post-graduate students of dental colleges in Bangalore city. This study was conducted in the month of August 2011. The knowledge was assessed, via responses to a self-administered,

structured, 21 item, close-ended questionnaire. The questionnaire used for the present study was from a 20 item questionnaire used in a similar study conducted by Chandrasekaran et al in 2010. [8] An additional question was incorporated in the existing questionnaire and was pilot tested on 50 participants from another dental college which was not a part of the study. The added question was found to be understandable by all the participants.

A total of 6 dental colleges were randomly selected out of 16 dental colleges using the lottery method. Since it was not possible to cover one dental college due to reasons for paucity of time, that dental college was excluded. For the present study 5 dental colleges were selected. Those colleges not providing post-graduate courses were excluded. A letter seeking permission to carry out the study was taken from the principal. The permission to conduct the study was obtained on a prior basis from respective head of the institutions before involving their students. Only those participants present on the day of the study and who gave informed consent were included for the study.

The aspects on which they were assessed were about the abbreviations of BLS (Basic Life Support), AED (Automated External Defibrillator) and EMS (Emergency Medical Services), sequential steps in BLS, assessment of resuscitation techniques with regard to airway, breathing, circulation in unresponsive victims of different age groups, techniques regarding removal of foreign body obstruction, recognitions of early signs of stroke and acute coronary syndrome. The results were analyzed using an answer key already provided by Chandrasekaran et al [8] which in-turn was prepared from the advanced cardiac life support manual.

Respondents were told that the study was completely confidential and were

encouraged to answer all questions which were in a tick box format. The questionnaires were personally distributed to participants in every department, the participants were also requested to fill and return the questionnaire in the presence of the investigator. Completed questionnaires were personally collected from all the participants. Incomplete questionnaires were rejected.

Finally the responses from a total of 328 participants (230 postgraduates and 90 interns) were analyzed for frequency distribution using SPSS version 17.

RESULTS

A total of 328 participants returned the completed questionnaire. Out of 328 respondents, 230 were postgraduates and 98 were interns (figure 1). About 56% of the respondents had never attended any training programme in BLS (Table 1, figure 2). The responses are shown in Table 2.

Table 1: Total number of interns and postgraduate students who have attended training programme in BLS

	Post-graduates	Interns
Attended BLS training	110	34
Did not attend BLS training	120	64
Total	230	98

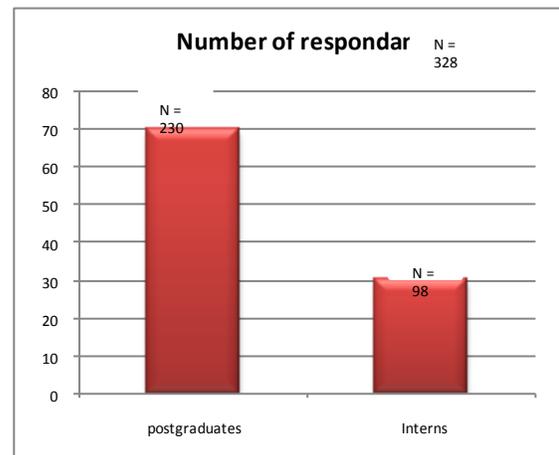


Figure: 1. Total number of respondents

It was found that 96% of the respondents knew the full form of BLS.

About 67% failed to insist on looking for safety as the first step in BLS. 73.7% failed to insist on activating Emergency Medical Services immediately after confirming unresponsiveness in an adult. 66.7% of the respondents did not know that the right location for chest compression was mid chest. Only 29.2% of the responders knew that the right location for chest compression in an infant was one finger breadth just below the nipple line (figure 3).

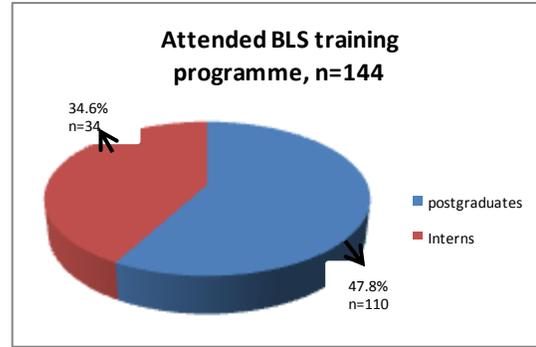


Figure 2. Total numbers of respondents who attended training programme

Table 2: Frequency distribution of knowledge of BLS among the interns and postgraduate students

Qs. No.	Topic	Right answer	Wrong answer	Don't know
1.	Training programme in BLS	144 (43.9%)	184 (56.09%)	
2.	Full form of BLS*	315 (96.0%)	11 (3.30%)	2 (0.6%)
3.	Looking for safety	81 (24.6%)	220 (67%)	24% (7.3%)
4.	Activating EMS†	62 (18.9%)	242 (73.7%)	27 (8.2%)
5.	Location for chest compression	86 (26.8%)	219 (66.7%)	13 (3.96%)
6.	Depth of chest compression in Infants	96 (29.2%)	126 (38.4%)	106 (32.3%)
7.	Depth of compression during CPR‡	108 (32.9%)	136 (41.4%)	84 (25.6%)
8.	Rescue breathing in Infants	60 (18.2%)	169 (51.5%)	99(30.1%)
9.	Awareness of CPR without mouth to mouth breathing	133 (40.5%)	123 (37.5%)	72 (21.9%)
10.	Location of chest compression in Infants	80 (24.3%)	110 (33.5%)	138 (42.0%)
11.	Depth of chest compression (neonate)	341 (12.5%)	101 (30.7%)	186 (56.7%)
12.	Rate of chest compression in infants and adults	99 (30.1%)	144 (43.9%)	85 (25.9%)
13.	Ratio of CPR in adult	51 (15.5%)	201 (61.2%)	76 (23.1%)
14.	Chest compression ventilation ratio in new born	29 (8.8%)	176 (53.6%)	123 (37.5%)
15.	Abbreviation of AED§	85 (25.9%)	183 (55.7%)	60 (18.2%)
16.	Abbreviation of EMS	230 (70.1%)	52 (15.85%)	46 (14%)
17.	First response in suspected foreign body obstruction in adult.	43 (13.1%)	256 (78.04%)	29 (8.8%)
18.	First response in suspected foreign body obstruction in Infant	166 (50.6%)	108 (32.9%)	54 (16.4%)
19.	Need for recovery position	35 (10.6%)	219 (66.7%)	74 (22.5%)
20.	Recognition of stroke and immediate action	125 (38.1%)	119 (36.2%)	84 (25.6%)
21.	Recognition of ACS¶& immediate action	218 (66.4%)	55 (16.7%)	54 (16.4%)

Basic Life Support

† Emergency Medical Services

‡ Cardiopulmonary Resuscitation

§ Automated External Defibrillator

¶ Acute Coronary Syndrome

Only 32.9% of the respondents knew the alternate technique of resuscitation when mouth to mouth ventilation was not opted. 51.5% of the responders failed to select mouth to mouth and nose technique as rescue breathing for infants. 21.9% answered don't know and 37.5% were

unable to correctly answer that the depth of chest compression in an adult is 1.5 to 2 inches. Only 24.3% knew that the depth of chest compression in a child is one third to one half the depth of the chest. Only 12.5% of the responders knew that correct depth of chest compression in an infant. (Figure 4)

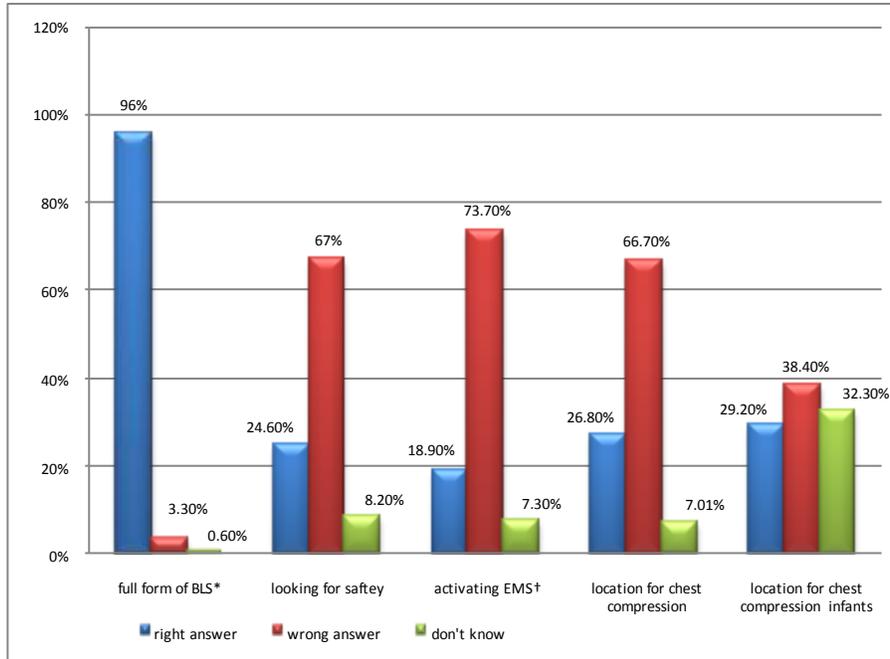


Figure: 3. Responses for 2nd to 6th question, n=328
 *Basic Life Support, †Emergency Medical Services

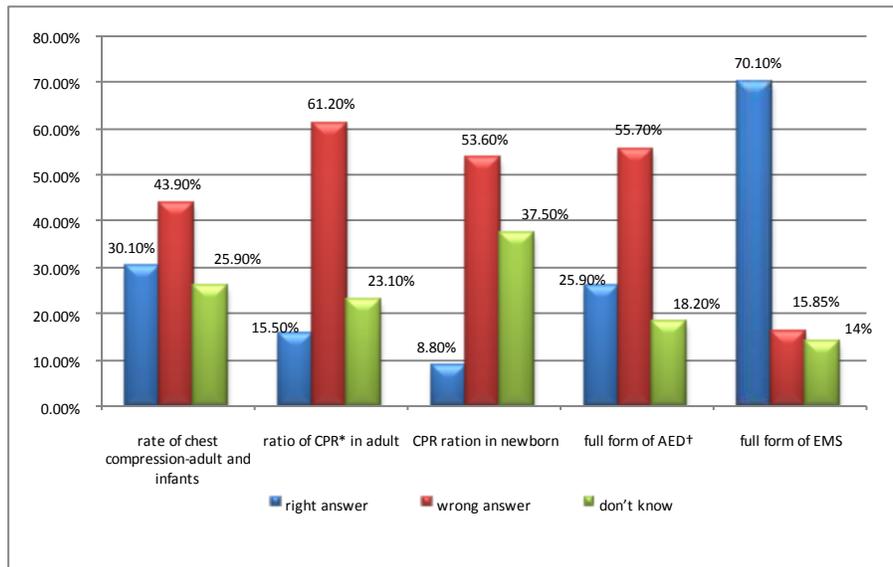


Figure: 4. Response for 7th to 11th question, n=328
 *Cardiopulmonary Resuscitation, †Automated External Defibrillator

43.9% of respondents gave a wrong answer and 25.9% of them did not know that the rate of chest compression in an adult and child is 100 compressions per minute. Only 15.5% of the responders answered that the compression ventilation ratio in a child and

a single rescuer CPR was 30:2. Only 8.8% of the responders knew that the ratio of compression ventilation in a new born was 3:1. Only 25.9% of them knew that the full form of AED was 'Automated External Defibrillator' and 70.1% of them knew that

full form of EMS was 'Emergency Medical Service'. (Figure 5)

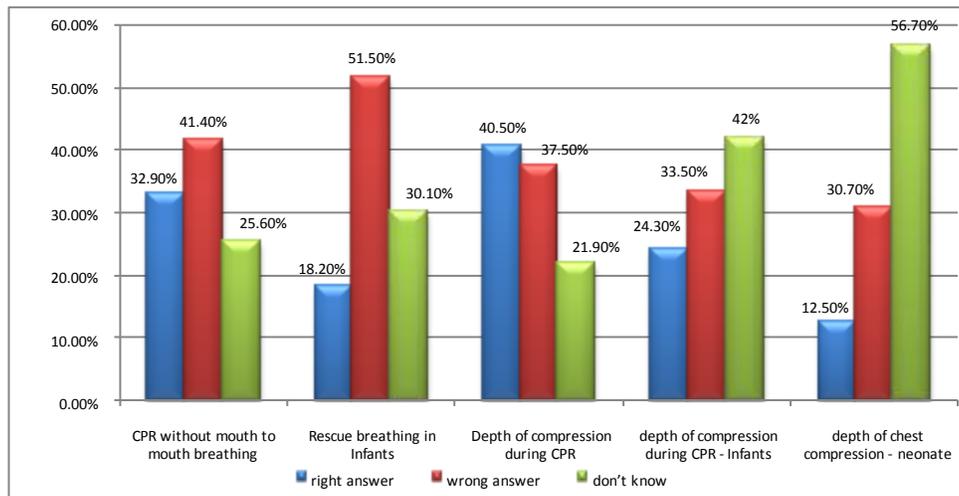


Figure 5. Response for 12th to 16th question, n=328

Only 13.1% knew that the first step in helping a suspected foreign body obstruction victim is to confirm the severity of obstruction by talking to him. 50.6% of them were aware about the right technique of foreign body removal from an infant. Only 10.6% knew about the role of the

recovery position in a spontaneously breathing unresponsive victim. 38.1% of the responders did not know the early signs of stroke and 66.4% knew how to recognize and help a patient with acute coronary syndrome (Figure 6).

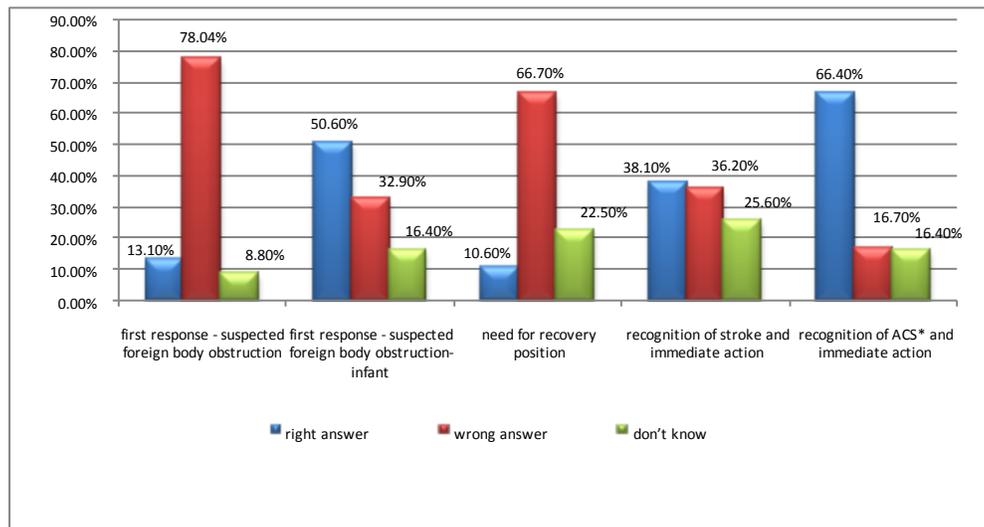


Figure 6. Response for 17th to 21st question, n=328
*Acute Coronary Syndrome

No one had complete knowledge of Basic Life Support. Only one out of 328 participants scored between 80% – 89%,

two of them scored between 70% – 79%, seventeen of the participants scored between 60% – 69%, twenty three of the participants

scored between 55% – 59% and the rest, that is two hundred eighty five participants were

below 50%. (Figure 7)

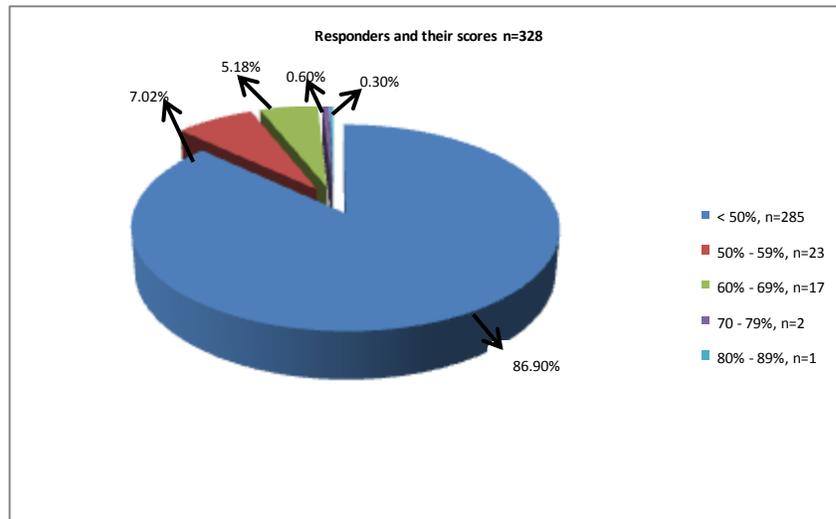


Figure 7: Responders and their scores

DISCUSSION

Resuscitation is one of the most evolving areas of modern medicine while cardiopulmonary resuscitation (CPR) is a treatment modality aimed at preventing sudden, unexpected death in life threatening situations. Health professionals should have sound CPR/BLS knowledge and skills. Medical emergencies do occur in dental practice more frequently. Fortunately, serious medical emergencies in dental practices are not common, but they are all the more alarming when they occur. The present study was conducted among the interns and post-graduate students of dental colleges in Bangalore city.

In the present study, we found that 43% of the responders attended a training programme in Basic Life Support. This could be due to the fact that after/during graduating, training of resuscitation skills is difficult due to busy schedules and lack of teachers and resources in developing countries like ours.

It was also found that no one had complete knowledge on Basic Life Support. Only one respondent scored between 80 – 89% and only 2 responders scored between 70 – 79%. Approximately 86.9% of responders scored below 50%. Similar findings were also found in a study conducted by Chandrasekaran et al [8] in 2010, where only two out of 1054 secured 80 – 89% and Chaudhary et al [9] in 2011 where only 3 out of 117 secured 80% marks.

Providing basic life support (BLS) is the dentists' most important contribution until definitive treatment for a medical emergency can be provided. Jodalli and Ankola in 2012 conducted a study involving fresh Dental graduates (Interns) to probe and quantify the perceptions of medical emergency in the dental office. It was found that dental graduates (interns) are not completely capable of handling medical emergencies and perceived a need for more intensive education in medical emergencies. [10] A study conducted by Sharma and Attar in 2012 also obtained similar results and

found that 88% of the dental interns scored less than 50%. They also found that in comparison to their dental intern's counterpart, medical interns scored better with only 44% scoring below 50%.^[11]

Out of 43.9% of responders who attended training programmes, 76.3% were postgraduate students of various specialties. The increased participation of postgraduate students in the present study and in attending training programmes suggest their willingness to gain more knowledge regarding Basic Life Support. But as been pointed out by A P L Goodwin, regular practice is required to maintain practical CPR skills.^[12]

The present study emphasizes the cognitive approach to the skills of Basic Life Support. Practical applications are very difficult to assess through questionnaires as cognitive abilities of a person may be much better than technical skills a person has. This could be one drawback of the present study.

CONCLUSION

It can be concluded that not only should the dentist be trained in Basic Life Support, but also it has to be reinforced from time to time, since the skills of CPR are difficult to teach and once taught difficult to retain. Also this should be incorporated into the academic curriculum as suggested by Hassan Zaheer et al and Sinha et al.^[2,13]

ACKNOWLEDGEMENT

I acknowledge all the Principals, Deans who permitted me to conduct my research in their respective dental institutes.

REFERENCES

1. Gonzaga HF, Buso L, Jorge MA et al. Evaluation of knowledge and experience of dentists of São Paulo State, Brazil about cardiopulmonary resuscitation. *Braz Dent J.* 2003; 14: 220-222.

2. Hassan Zaheer, ZebaHaque. Awareness about BLS (CPR) among medical students: status and requirements. *J Pak Med Assoc,* January 2009; 59(1):57-59.
3. Miller BF, Keane C: *Encyclopedia and Dictionary of Medicine, Nursing and Allied Health*, 2nd Edition, , Toronto, 1978; 878.
4. Baker AB, *Artificial Respiration, the history of an idea, Med Hist* 1971; 15:336-46.
5. Tossach W, *Medical Essay and Observations, Edinburgh* 1744; 5(2):605. A man, dead in appearance, recovered by distending the lungs with air.
6. Gupta T, Aradhya MR, Nagaraj A. Preparedness for medical emergencies among dentists in Udupi and Mangalore, India. *J Contemp Dent Pract.*2008; 9(5):92-99.
7. Laurent F, Augustin P. Managing a cardiac arrest: evaluation of final year predoctoral dental students. *J Dent Educ.* 2009; 73:211-218.
8. Chandrasekaran S, Kumar S, Bhat SA et al. Awareness of basic life support among medical, dental, nursing students and doctors.
9. Sharma R, Attar NR, Adult Basic Life Support (BLS) awareness and knowledge among medical and dental interns completing internship from deemed university. *Nitte University Journal of Health Science* 2012; 2(3):6-13.
10. Jodalli PS, Ankola AV, Evaluation of knowledge, experience and perceptions about medical emergencies amongst dental graduates (Interns) of Belgaum City, India. *J ClinExp Dent.* 2012; 4(1):e14-8.

11. Chaudhry A, Parikh H, Dave V, Current scenario: knowledge of basic life support in medical college. National Journal of Medical Research 2011; 1(2):80-82.
12. Goodwin A P L, Cardiopulmonary resuscitation training revisited.

- Journal of Royal Society of Medicine. August 1992;8:452-453.
13. Sinha AK, Palaria U, Gaur S et al, Knowledge and familiarity with basic life support among medical students. J Indian Acad Forensic Med. July-September 2012; 34(3): 233-235.

How to cite this article: Shekhawat KS, Arunima C. Knowledge of basic life support among the interns and postgraduate students of dental colleges in bangalore city, karnataka. Int J Health Sci Res. 2014;4(9):158-166.

International Journal of Health Sciences & Research (IJHSR)

Publish your work in this journal

The International Journal of Health Sciences & Research is a multidisciplinary indexed open access double-blind peer-reviewed international journal that publishes original research articles from all areas of health sciences and allied branches. This monthly journal is characterised by rapid publication of reviews, original research and case reports across all the fields of health sciences. The details of journal are available on its official website (www.ijhsr.org).

Submit your manuscript by email: editor.ijhsr@gmail.com OR editor.ijhsr@yahoo.com